

Band VS Circular Sawmills

Relative Labor & Maintenance Costs

Substantial sawmill lumber yield increases from kerf and sawing variation reductions can be realized by employing band rather than circular headrigs. Softwood sawmills rapidly adopted bandsaw headrig technology to the extent that it is currently unusual to find circular saw headrigs in a softwood sawmill. Hardwood sawmills, faced with a different economic situation, have been relatively slow to adopt bandsaw headrigs.

Hardwood sawmills utilizing circular headrigs to process low-value products or making relatively few headrig sawcuts on each log may find that headrig kerf reduction is not a significant factor in profit maximization. For them, circular headrigs are usually the most economical primary processing option.

Cost is another reason that hardwood sawmills have been slow to convert to band headrigs. Hardwood sawmill managers may not feel that increased profits from higher yields would offset increased costs. The capital cost of a band headrig can be expected to be three to six times that of a circular headrig. Installation costs and income lost during installation may be considerable. These costs can be determined from band headrig manufacturers and engineering consultants.

Unlike headrig and installation costs, operational costs relative to circular headrigs are currently difficult to determine. No published information describing the relative operating costs of band versus circular headrigs exists. This information, if

available, would be valuable in helping hardwood sawmill managers determine the feasibility of converting to band headrigs.

Our study quantifies and compares the more difficult-to-estimate relative labor and maintenance costs of band versus circular headrigs.

THE SURVEY

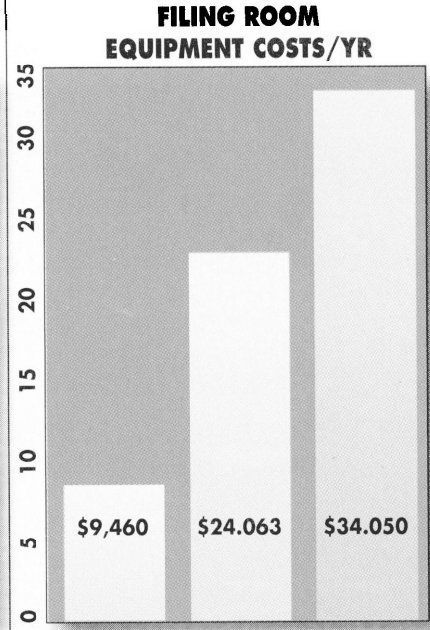
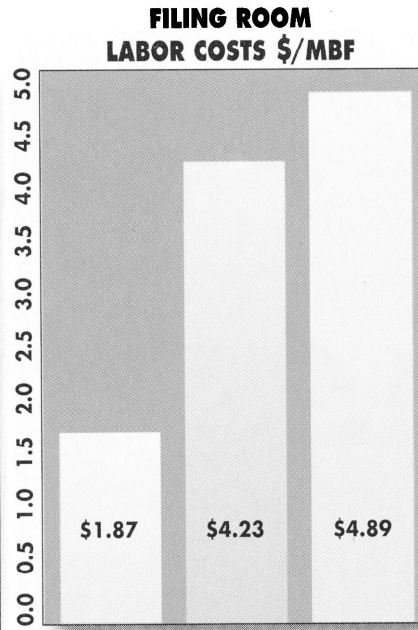
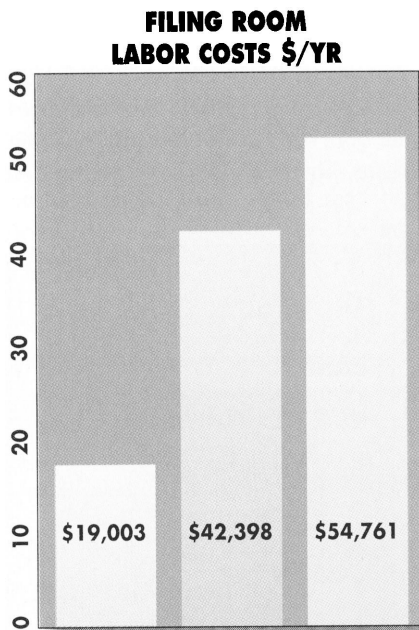
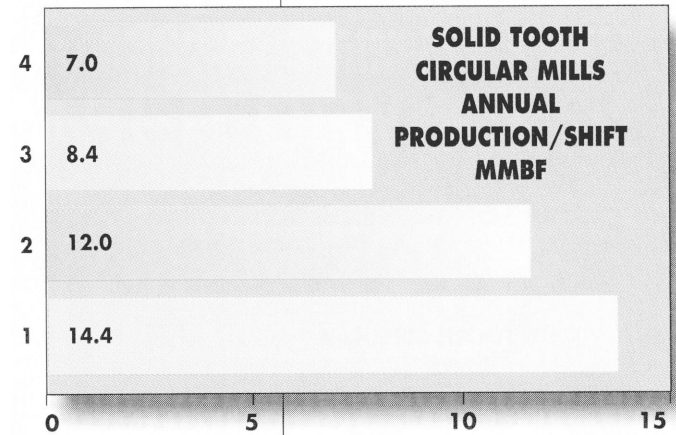
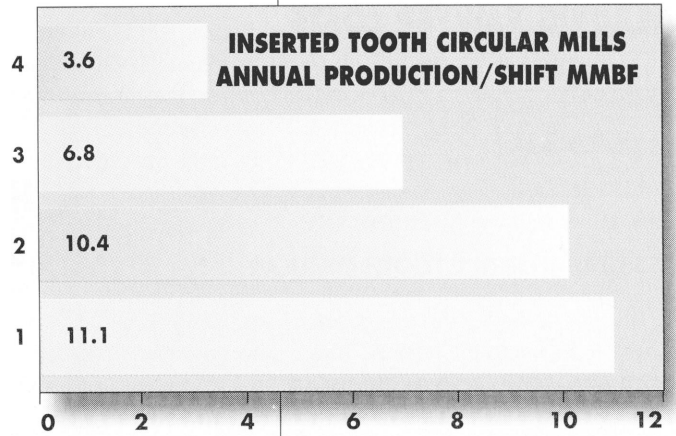
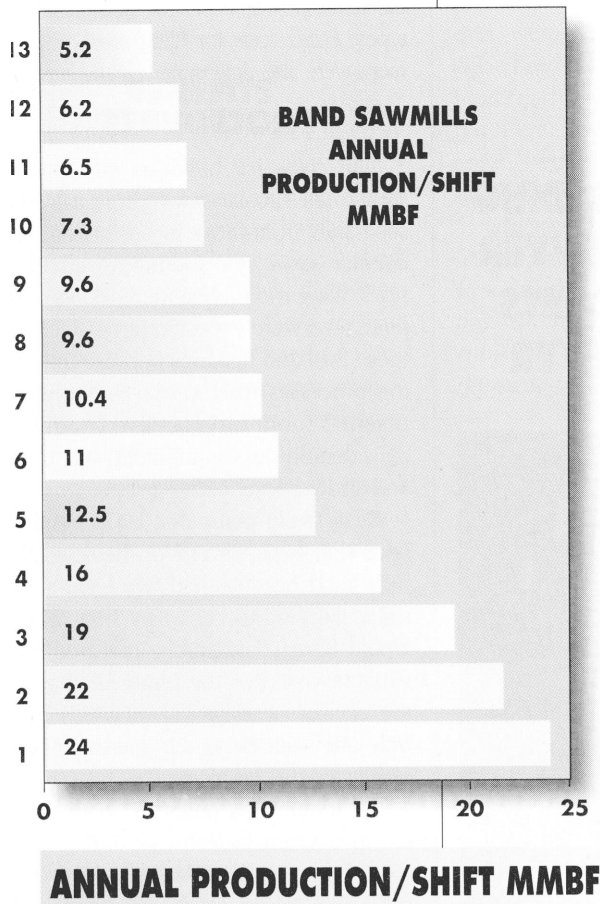
The relative operating costs of band and circular headrigs were obtained by surveying 21 Mississippi hardwood sawmills. Thirteen of these sawmills employed band headrigs and eight employed circular headrigs. Of the circular headrigs, four had inserted teeth and four had solid teeth. A range of sawmill sizes in terms of annual one-shift lumber production was included in the survey. The accompanying chart gives the annual one-shift production of the study sawmills.

The data on costs and horsepower were obtained from surveys made in June 1992. While the absolute 1992 costs reported here will be somewhat lower than current costs, 'the relative differences in costs between the headrig types should remain the same. Variable costs determined by the survey included annual cost of sawblades, headrig sawyer costs plus benefits, and filing room labor costs plus benefits. When sawblade maintenance was performed off site, the annual costs were estimated and included in the filing room salaries plus benefits category. Horsepower values were obtained to provide a measure of the relative

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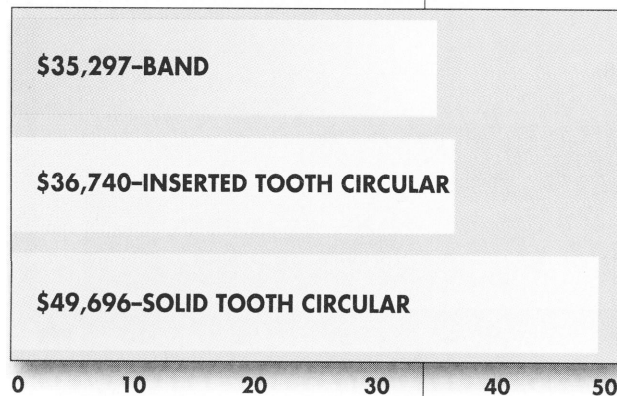
Southern Lumberman



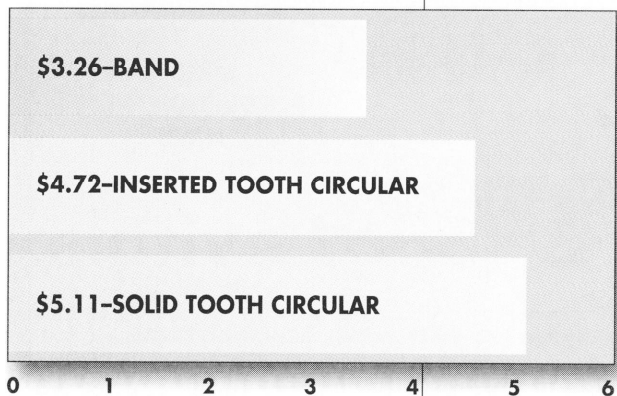
FILING ROOM COSTS/YEAR

INSERTED TOOTH CIRCULAR
SOLID TOOTH CIRCULAR
BAND

HEADRIG SAWYER COSTS

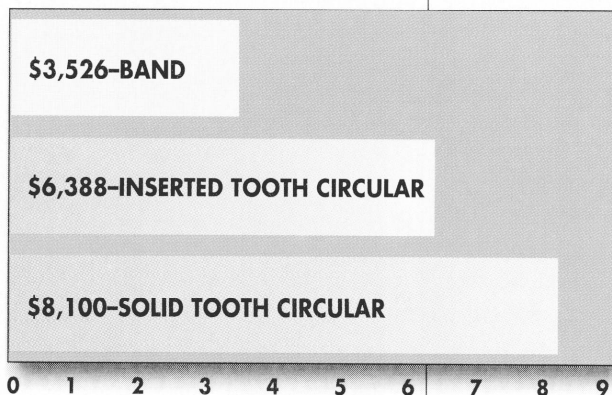


HEADRIG SAWYER COSTS \$/YR

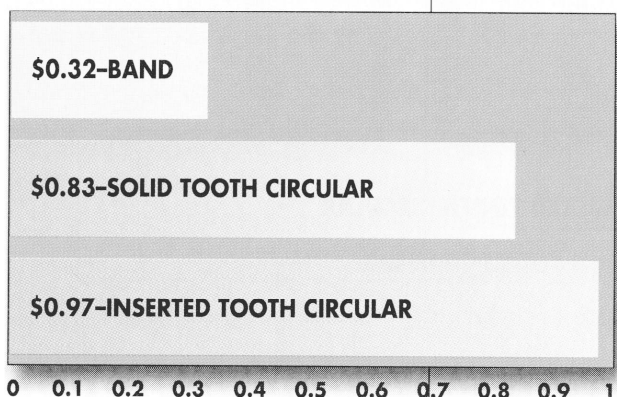


HEADRIG SAWYER COSTS \$/MBF

SAWBLADE COSTS



SAWBLADE COSTS \$/YR



SAWBLADE COSTS \$/MBF

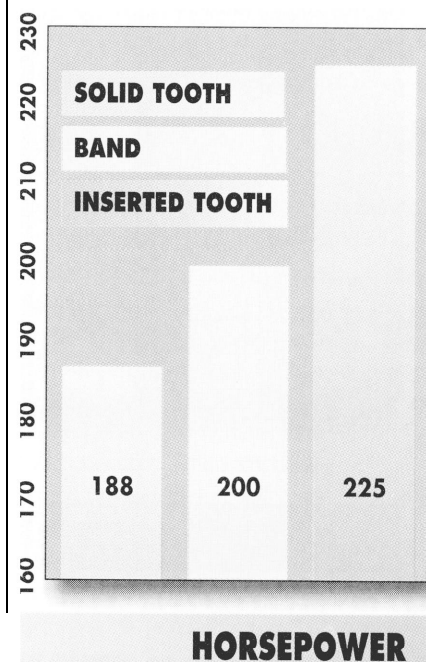
electrical power costs for both headrig types. Fixed costs for filing room equipment were also determined by the survey.

PROCEDURES

The costs for headrigs employing solid-tooth circular saws were analyzed separately from those for inserted-tooth circular saws. For solid-tooth circular saws, filing room equipment, skills, and filing time were expected to be close to those for band headrigs because the filing processes for the two are similar. Inserted-tooth circular saws require considerably less equipment and time and a lower level of filing skills.

Costs were computed on an eight-hour shift basis. Several of the sawmills with band headrigs had two eight-hour shifts. Totaling the costs for both shifts would have considerably increased the variable costs for the band relative to the circular headrigs, all of which had only one shift. Using the one-shift costs eliminated this problem.

For information purposes some costs are also given in terms of dollars per MBF. These costs are variable costs (filing room labor, sawblade cost, and headrig sawyer cost). These are costs that would increase directly, for example, if sawmill production were doubled by adding a second shift. The per MBF costs for these variable cost categories are also reported in the accompanying charts. The per MBF costs are provided



for information only as all comparisons were made based on the total annual one-shift production costs.

BENEFITS

The survey results show that inserted-tooth circular sawmills that convert to a band headrig can expect filing room equipment costs to increase by about 2.5 times and filing room labor costs by about 2.9 times current costs. While there were some apparent differences between band and solid-tooth circular headrig filing room equipment and labor costs, statistical tests indicated that these differences were not significant.

Therefore, sawmills that convert from a solid-tooth circular sawmill to a band headrig should experience no real change in costs for filing room labor or equipment from the conversion to band headrig.

The relative headrig type sawblade costs reflect the lower cost of band compared to circular sawblades. A reduction in sawblade costs of about 50 percent can be expected by a sawmill converting from either of the two circular headrig types to a band headrig.

The sawyer salary for the solid-tooth circular headrig appears to be considerably higher than for the band and inserted-tooth headrigs. Because the task of sawing does not change by headrig type, the high salary for inserted tooth circular headrig sawyers probably resulted from seniority or management policy by companies with this headrig type. In addition, a statistical test showed that the apparently high solid-tooth circular headrig sawyer cost did not differ significantly from those for the other two headrig types. Therefore, no change in headrig sawyer salary should be experienced by a circular headrig sawmill converting to a band headrig.

Horsepower values differed little among the three headrig types. Therefore, electricity costs should not change as a result of a conversion from circular to band headrig.

CONCLUSIONS

These results indicate that some band headrig operating costs are considerably higher than for circular headrigs. Annual filing room equipment and labor costs are from two to three times higher for band compared to inserted tooth circular headrigs. Solid tooth circular headrigs had the same filing room labor and

equipment costs as did band headrigs. Sawblade costs for band headrigs, however, were 50 percent lower than for circular headrigs. There is no difference in headrig sawyer costs or horsepower requirements, and therefore electricity costs, between the band and circular headrig types.

Editor's Note: The authors are respectively: professor at the Forest Products Laboratory at Mississippi State University; post-doctoral research assistant at Louisiana Forest Products Laboratory in Baton Rouge, Louisiana; project leader

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